

Abstract:

An improved building panel and attachment system for the production of structures with improved energy efficiency and fire safety characteristics. Panels are formed from a structural angle I[™] beam with angles emerging from a web and forming dovetail shaped channels. The dovetail channels provide anchorage points for cross members within the panels as well as weather-stripping and mechanical joints between panels and a building frame. Fiberglass can be combined with Argon gas in the panels to significantly improve R-Values in commercial buildings. A fire safety system allows heat and smoke to be vented from the building during a fire, and for improved safety and effectiveness of fire fighting personnel. Improved insulating panels, daylighting panels with light attenuation and heat dissipation means, as well as solar panels for heating and cooling are shown. These can be assembled into a roof decks and walls to reduce building operating costs and create more attractive retail and commercial buildings. An improved air distribution system, and thin film collectors allow for production of an entire roof of solar collectors at a reasonable cost. An advanced control system for balancing daylighting and artificial lighting is shown, along with a demand side management, (DSM), energy conservation system. Distributed power systems for developing countries and un-interruptible power supplies with reduced cost for photovoltaics are also produced from the panels.